

(19)



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(11)

**EP 1 088 490 A2**

(12)

**EUROPEAN PATENT APPLICATION**

(43) Date of publication:

**04.04.2001 Bulletin 2001/14**

(51) Int. Cl.<sup>7</sup>: **A44B 19/26**

(21) Application number: **00121106.9**

(22) Date of filing: **28.09.2000**

(84) Designated Contracting States:

**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU  
MC NL PT SE**

Designated Extension States:

**AL LT LV MK RO SI**

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(30) Priority: **30.09.1999 JP 27994699**

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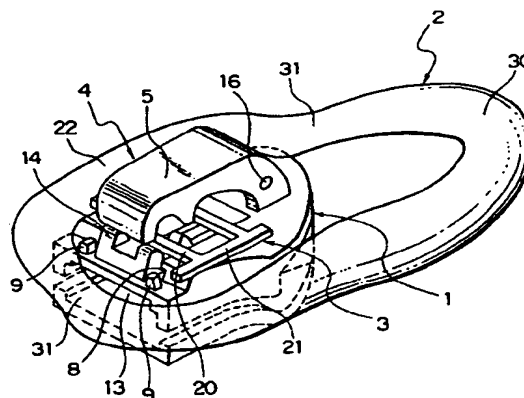
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**(54) Zipper pull of slider for slide fastener**

(57) An object of this invention is to provide a zipper pull of resilient body which is attached to a slider in a lateral direction thereof and capable of sliding the slider by rotating the zipper pull slightly so that the zipper pull is held in a stabilized state. A zipper pull mounting portion (4) is provided on a top surface of a slider body (1) and a connecting body (3) of a zipper pull (2) is disposed in a lateral direction relative to the mounting portion (4). The connecting body (3) is comprised of two lateral bars (20) disposed in parallel and vertical bars (21) connected to both ends thereof so as to be protruded longitudinally. One of the vertical bars (21) is buried in the zipper pull (2) of resilient body so as to form a fixing portion (22). The zipper pull (2) has an annular shape for surrounding the slider body (1). The lateral bars (20) of the connecting body (3) are inserted into the mounting portion (4). When a free end of the zipper pull (2) is lifted up, the fixing portion (22) is rotated and at the same time, the free vertical bar (21) of the connecting body (3) is lifted up, so that a locking pawl lever of automatic locking mechanism connected to the lateral bars (20) is lifted up, thereby allowing the slider to slide. When the slider is locked, the zipper pull (2) is fallen onto the slider body (1) so that it can be maintained in a stabilized condition without swinging freely.

**FIG. 1**



**EP 1 088 490 A2**

zipper pull is urged to be always fallen on a top face of the slider body. A state in which the zipper pull is urged to be always fallen on the top face of the slider body refers to a state in which the zipper pull is disposed substantially in parallel to the top face of the slider body.

[0010] Preferably, the zipper pull made of resilient body to be fixed to the connecting body is formed in an annular shape having an appropriate shape and a part of the annular portion is fixed to a vertical bar provided on the connecting body so as to form a fixing portion.

[0011] Alternatively, the zipper pull made of resilient body to be fixed to the connecting body is formed in a sheet-like shape having an appropriate shape and a part of the sheet-like portion is fixed to a vertical bar provided on the connecting body so as to form a fixing portion.

[0012] Preferably, the connecting body for connecting the zipper pull of resilient body to the slider body is comprised of two lateral bars disposed with an interval and being capable of being inserted into the zipper pull mounting portion provided on a top face of the slider body, and vertical bars molded integrally with the lateral bars and being protruded in back and forth direction from each of both ends of the lateral bars.

[0013] Also preferably, the connecting body for connecting the zipper pull of resilient body to the slider body places the fixing body at which the zipper pull of resilient body is fixed to contact thereon.

[0014] Preferably, the connecting body for connecting the zipper pull of resilient body to the slider body disposed the vertical bar on one side of the lateral bars and the lateral bars of U letter shape are connected to the vertical bar while protrusions provided on the top surface of the slider body are fitted in between the lateral bars disposed on the right and left of the mounting portion provided on the top surface of the slider body.

[0015] Further preferably, the connecting body, which connects the zipper pull of resilient body to the slider body, has an annular supporting portion to which the mounting portion can be fitted provided on the top surface of the sliding body in a floating state, a restricting portion protruded over the top surface of the slider body is provided on the outer side of the supporting portion and the fixing portion at which the zipper pull of resilient body is fixed is provided on an opposite side to the restricting portion.

[0016] Preferably, the connecting body, which connects the zipper pull of resilient body to the slider body, is comprised of a lateral bar and vertical bars connected to both ends thereof, engaging portions are provided on one outer side of the vertical bar such that they are protruded outward thereof, and the zipper pull of resilient body is fixed to the engaging portions by means of a mounting ring.

[0017] Also preferably, the lateral bars provided laterally to the connecting body, which connects the zipper pull of resilient body to the slider body, are inserted into an automatic locking pawl lever provided within a yoke

mounted on the top surface of the slider body so that the locking pawl lever is capable of being lifted up.

[0018] Preferably, the vertical bar disposed on one side of the connecting body is buried and fixed in the zipper pull of resilient body connected to the connecting body, so as to form the fixing portion.

[0019] Preferably, the zipper pull of resilient body connected to the connecting body contains narrow or concave neck portions, which is easily to be elastically deformed, in a longitudinal direction in the center of the slider body.

[0020] Preferably, the zipper pull of resilient body connected to the connecting body contains a grip portion whose diameter is increased or which has an increased thickness on an opposite side to the fixing portion in which the connecting body is fixed.

[0021] Also preferably, the zipper pull of resilient body connected to the connecting body, protrudes obliquely forward on an opposite side to the fixing portion formed in an annular shape and in which the connecting body is fixed, and contains a grip portion whose space is expanded.

[0022] Further preferably, the zipper pull of resilient body connected to the connecting body is formed in annular D letter or inverted D letter shape and contains a grip portion which has a space longitudinally on an opposite side to the fixing portion in which the connecting body is fixed.

[0023] Alternatively, the zipper pull of resilient body is formed in a sheet-like shape and raised substantially from the fixing portion fixed to the connecting body and bent to cover the mounting portion so as to form a bent portion.

[0024] Preferably, the zipper pull of resilient body, which is connected to the connecting body, is formed and molded integrally with natural rubber, synthetic rubber or thermoplastic elastomer.

#### BRIEF DESCRIPTION OF THE DRAWINGS

##### [0025]

Fig. 1 is a perspective view of a slider having a zipper pull of a slider for slide fastener of a first embodiment;

Fig. 2 is a front view of the slider of Fig. 1.

Fig. 3 is a sectional view taken along the line II-II in Fig. 2 of the zipper pull of the slider.

Fig. 4 is a sectional view taken along the line III-III in Fig. 2 of the slider.

Fig. 5 is a front view of a fastener chain having a zipper pull of a slider for slide fastener of a second embodiment.

Fig. 6 is a front view of a fastener chain having a zipper pull of a slider for slide fastener of a third embodiment.

Fig. 7 is a sectional view taken along the line IV-IV showing major portions of the slider of Fig. 6.

sealing protrusions 9 provided at an entrance of the concave groove 8 are crushed to seal part of the concave groove 8 thereby preventing the sliding body 14 from slipping out of the concave groove 8. At the same time, the fixing portion 22 in which the connecting body 3 is buried is brought into a contact with the top surface of the slider body 1. Consequently, assembly of the slider with the automatic locking device is completed.

**[0032]** An operation of the slider will be described. When it is intended to close the fastener chain, the finger is inserted into the grip portion 30 of the zipper pull 2, and the zipper pull 2 is pulled forward. Then, the zipper pull 2 of resilient body is raised through the neck portion 31 so that a force for rotating the fixing portion 22 which fixes the resilient body and a force for lifting up the zipper pull 2 act at the same time. Consequently, with these actions, the free vertical bar 21 of the connecting body 3 is lifted slightly above the top surface of the slider body 1 and simultaneously the locking pawl lever 10 within the yoke 5 is lifted up. Then, the locking pawl 11 is escaped from the guide groove 13 so that the slider is capable of sliding forward. Meanwhile, even when the locking pawl 11 is protruded slightly in the guide groove 13, the coil spring 17 is compressed by fastener elements depending on the shape of the locking pawl lever 10 so that the slider can be slid forward.

**[0033]** When the slider is locked and the finger is released from the grip portion 30 of the zipper pull 2, the zipper pull 2 is fallen onto the top surface of the slider body 1 by a restoration force of the resilient body. At the same time, the connecting body 3 also comes into contact with the top surface of the slider body 1. The locking pawl 11 of the locking pawl lever 10 is protruded into the guide groove 13 by an elastic force of the coil spring 17 so that the locking pawl 11 is inserted between the fastener elements thereby automatically locking the slider. Consequently, the zipper pull 2 is maintained in a state in which it is fallen onto the slider body 1 and in contact therewith, so that the zipper pull 2 is held without swinging freely.

**[0034]** Next, when it is intended to separate and open the fastener chain, the grip portion 30 of the zipper pull 2 is gripped so as to lift up the zipper pull 2 slightly and then, the zipper pull 2 is pulled backward. Then, the zipper pull 2 of resilient body rotates the fixing portion 22 by a force of lifting up. The connecting body 3 lifts up the free vertical bar 21 slightly from the top surface of the slider body 1 by such an action and at the same time, the locking pawl lever 10 is also lifted up. Consequently, the locking pawl 11 is escaped from the guide groove 13 so that the slider can be slid backward.

**[0035]** As described above, when the zipper pull 2 made of annular resilient body is lifted up slightly against an elastic force of the resilient body, the slider can be slid. Further, if the fingers are released from the zipper pull 2, the zipper pull 2 is automatically fallen onto the top surface of the slider body 1 by an elastic force of the resilient body. Moreover, as long as an

external force is not applied to the zipper pull 2, the zipper pull 2 is maintained on the slider body 1 so that it is maintained stably without swinging freely.

**[0036]** Next, a zipper pull of a slide fastener according to a second embodiment shown in Fig. 5 will be described. This slider has the same configuration as the previously described example except that the shape of the zipper pull 2 is different. The zipper pull 2 is formed in inverted D letter shape using annular resilient body and the vertical bar 21 of the connecting body 3 is buried integrally in a curved portion thereof so as to form the fixing portion 22. By providing a side opposite to the fixing portion 22 with a wide space vertically, the grip portion 30 is formed, so that the grip portion is easy to grip from any direction. Thus, the zipper pull 2 of this slider aims at securing easiness of operation.

**[0037]** Next, a zipper pull of a slider according to a third embodiment shown in Figs. 6 and 7 will be described. The lateral bars 20 of the connecting body 3 are formed in a U letter shape as a whole and the vertical bar 21 is connected integrally to ends of the lateral bars 20 in the U letter shape. This vertical bar 21 is buried in a curved portion of an annular zipper pull 2 of resilient body formed in the D letter shape so as to form the fixing portion 22. Then, the grip portion 30 is formed such that a wide space is expanded vertically on an opposite side of this fixing portion 22. The neck portion 31 having a concave shape is formed at each of portions opposing the front and rear in the longitudinal direction in the center of the slider body 1 so that the zipper pull 2 is easy to elastically deform.

**[0038]** To prevent the connecting body 3 from being inclined and moved longitudinally when the connecting body 3 having the U letter shape is disposed on the top surface of the slider body 1, protrusions 6 are provided on the right and left of the mounting portion 4 so as to protrude from the top surface of the slider body 1. These protrusions 6 are fitted in between the lateral bars 20 of the U letter shape so as to prevent the zipper pull 2 from being loose.

**[0039]** Next, a zipper pull of a slider according to a fourth embodiment shown in Figs. 8 and 9 will be described. The connecting body 3 to be mounted on the slider body 1 is provided with a tongue-like supporting portion 23 which surrounds the zipper pull mounting portion 4 provided on the slider body 1 and to which it can be fitted in a floating state. A tongue-like engaging piece 24 for attaching the zipper pull 2 is connected integrally to a side of this supporting portion 23. Engaging protrusions 25 for capturing the zipper pull 2 of resilient body are provided on an inner face of the engaging piece 24. A portion in contact with the slider body 1 of the supporting portion 23 is provided with a restricting portion 26 which is protruded sideways to prevent the connecting body 3 from swinging when the supporting portion 23 surrounds the zipper pull mounting portion 4 and fits it in the floating state.

**[0040]** Upon mounting the connecting body 3 onto

vertical bars 21 being protruded longitudinally from each of both ends of the lateral bars 20 molded integrally with the lateral bars 20. Therefore, there is such an effect that the connecting body 3 can be formed with a simple structure and further, the connecting body 3 is prevented from being inclined longitudinally when the zipper pull 2 is operated, thereby achieving a smooth sliding operation.

**[0052]** And further, the connecting body 3 is placed on a top surface of the slider body 1 such that the fixing portion 22 in which the zipper pull of resilient body is fixed is in contact with the top surface. Thus, the connecting body 3 is so formed that the fixing portion 22 in which the zipper pull 2 of resilient body is fixed can be always placed on the slider body 1, so there is such an effect that the zipper pull 2 of resilient body can be maintained on the slide body 1 in a stabilized state neatly.

**[0053]** Still further, the vertical bar 21 is disposed on one side of the connecting body 3 and the lateral bars 20 of U letter shape are connected to the vertical bar 21 and protrusions 6 provided on the top surface of the slider body 1 are fitted in between the lateral bars 20 disposed on the right and left of the mounting portion 4 provided on the top surface of the slider body 1. Thus, there is such an effect that the connecting body 3 has the U letter shape and can be maintained on the slider body 1 in a stabilized state. Further, there is such an effect that an inclination of the connecting body 3 longitudinally upon operation is prevented with a simple structure thereby achieving a smooth sliding operation.

**[0054]** And the connecting body 3 has an annular supporting portion 23 to which the mounting portion 4 can be fitted provided on the top surface of the sliding body 1 in a floating state, a restricting portion 26 protruded over the top surface of the slider body 1 is provided on the outer side of the supporting portion 23 and the fixing portion 22 in which the zipper pull 2 of resilient body is fixed is provided on an opposite side to said restricting portion. Thus, there is such an effect that the connecting body 3 can be fitted to the mounting portion 4 with a gap and further, the connecting body 3 is prevented from being inclined longitudinally when the zipper pull 2 is operated, thereby achieving a secure and smooth sliding operation.

**[0055]** And further, the connecting body 3 is comprised of a lateral bar 20 and vertical bars 21 connected to both ends thereof, engaging portions 27 are provided on one vertical bar 21 such that they are protruded outward thereof, and the zipper pull 2 of resilient body is fixed to the engaging portions 27 by means of a mounting ring 28. Thus, there is such an effect that the annular zipper pull 2 formed of resilient body easily can be attached to the connecting body 3 having a simple structure firmly.

**[0056]** Still further, the lateral bars 20 of the connecting body 30 are inserted into an automatic locking pawl lever 10 provided within a yoke 5 mounted on the

top surface of the slider body 1 so that the locking pawl lever 10 is capable of being lifted up. Thus, there is such an effect that the connecting body 3 can be easily applied to the slider having the automatic locking mechanism with a simple structure.

**[0057]** Further, the vertical bar 21 disposed on one side of the connecting body 3 is buried and fixed in the zipper pull 2 of resilient body so as to form the fixing portion 22. Thus, there is such an effect that the connecting body 3 can be fixed to the zipper pull 2 of resilient body very simply and firmly.

**[0058]** And the zipper pull 2 of resilient body contains narrow or concave neck portions 31 in a longitudinal direction in the center of the slider body 1. Thus, there is such an effect that the fixing portion 22 is not affected so much by elastic deformation thereby achieving a secure operation.

**[0059]** And further, the zipper pull 2 of resilient body formed in an annular shape, contains a grip portion 30 whose diameter is increased or which has an increased thickness on an opposite side to the fixing portion 22 in which the connecting body 3 is fixed. Thus, there is such an effect that the grip portion 30 having a simple structure and being easy to operate can be formed easily in the zipper pull 2 of resilient body.

**[0060]** Still further, the zipper pull 2 of resilient body forms a grip portion 30 on an opposite side to the fixing portion 22 formed in an annular shape and in which the connecting body 3 is fixed, such that a space is expanded obliquely forward or the zipper pull 2 of resilient body is formed in annular D letter or inverted D letter shape and has a grip portion 30 on an opposite side to the fixing portion 22 in which the connecting body 3 is fixed, such that a space is expanded vertically. Thus, there is such an effect that the grip portion 30 having a simple structure and which can be pulled effectively can be formed in the annular zipper pull 2 of resilient body.

**[0061]** And the zipper pull 2 of resilient body is formed in a sheet-like shape and raised from the fixing portion 22 and bent to cover the mounting portion 4 so as to form a bent portion 32. Thus, there is such an effect that the sheet-like zipper pull 2 of resilient body can be attached to various types of the sliders with a good appearance and can be operated extremely easily.

**[0062]** And further, the zipper pull 2 of resilient body is formed of natural rubber, synthetic rubber or thermoplastic elastomer. Thus, there is such an effect that the annular or sheet-like zipper pull 2 of resilient body can be formed easily of material capable of being elastically deformed and that an effective elastic force can be exerted. Therefore, the effects exerted by the invention are extremely remarkable.

## Claims

1. A zipper pull of a slider for slide fastener having a zipper pull mounting portion provided on a top face

15. A zipper pull of a slider for slide fastener according to claim 3, being characterized in that the zipper pull (2) of resilient body is formed in a sheet-like shape and raised from the fixing portion (22) and bent to cover the mounting portion so as to form a bent portion (32). 5
16. A zipper pull of a slider for slide fastener according to claim 1, being characterized in that the zipper pull (2) of resilient body is formed of natural rubber, synthetic rubber or thermoplastic elastomer. 10

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FIG. 2

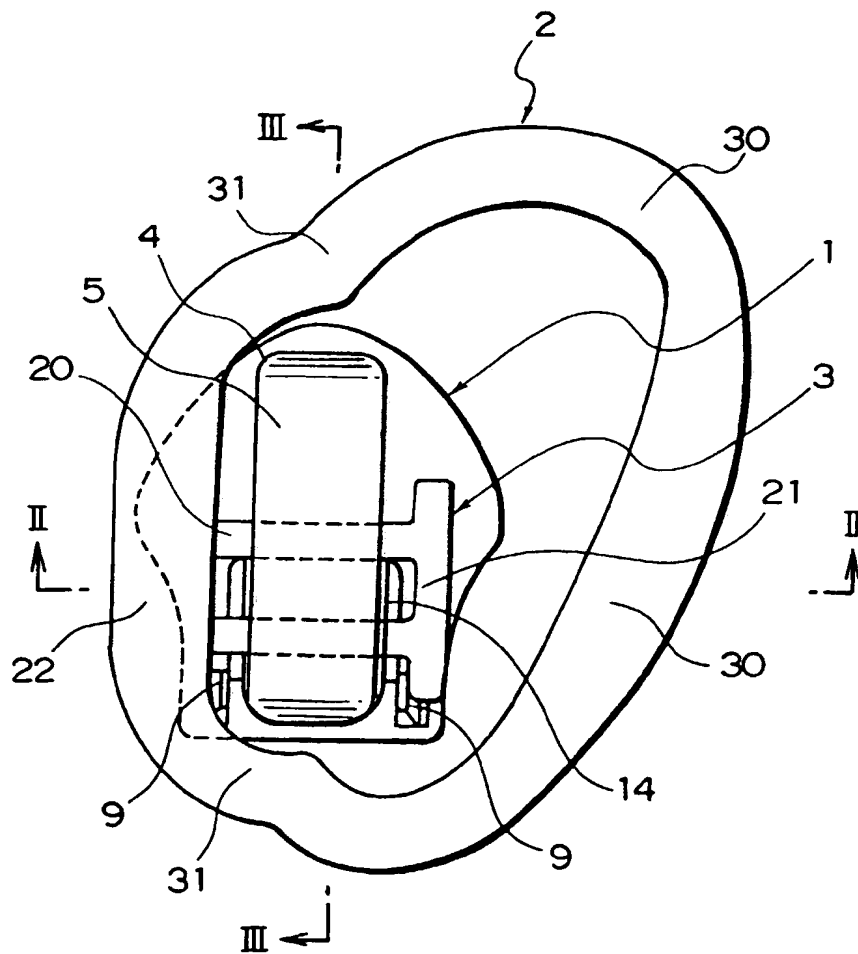


FIG. 4

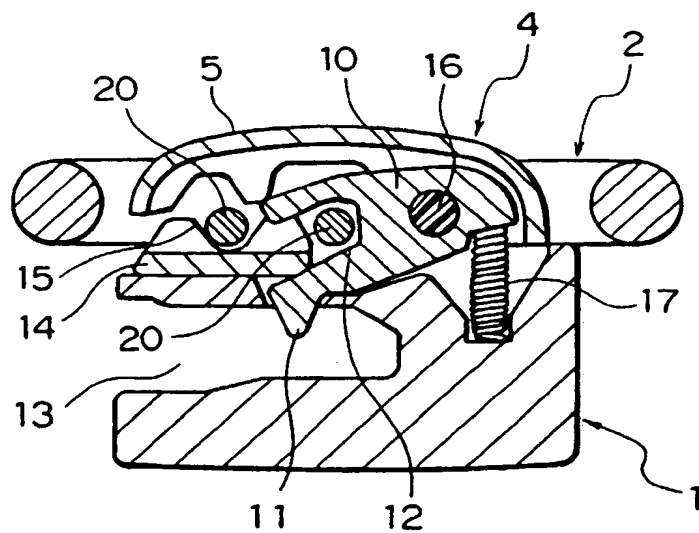


FIG. 6

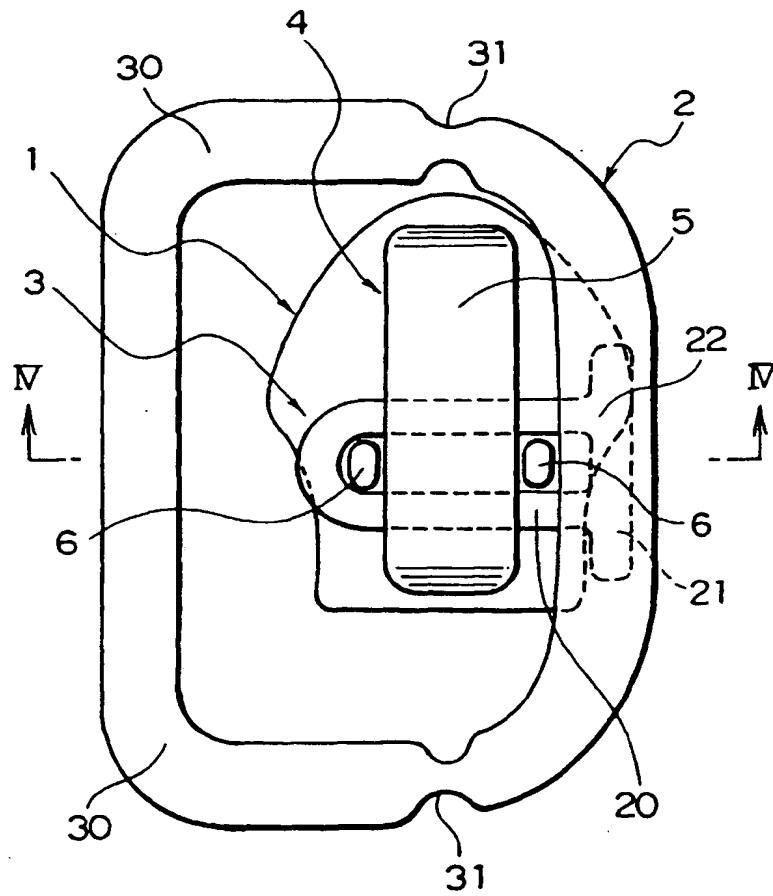




FIG. 9

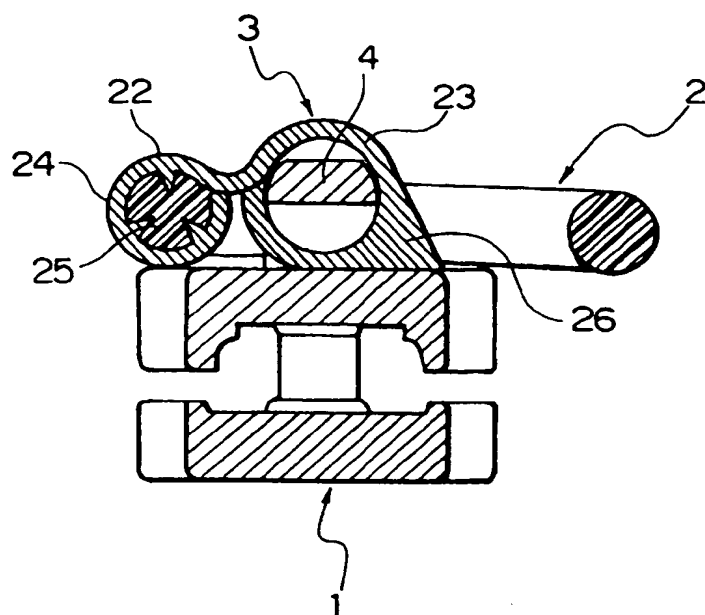


FIG. 10

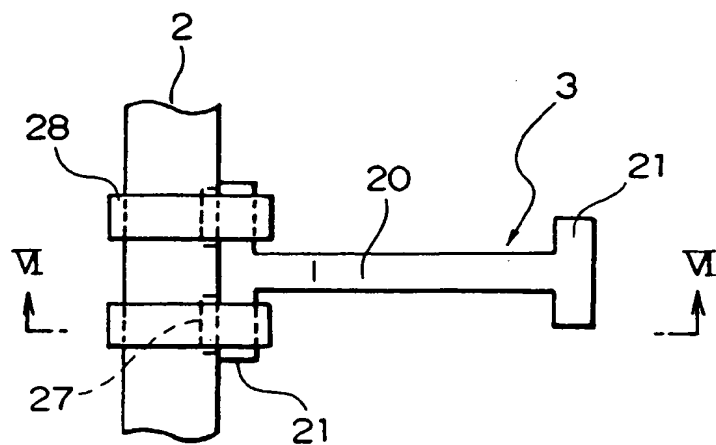
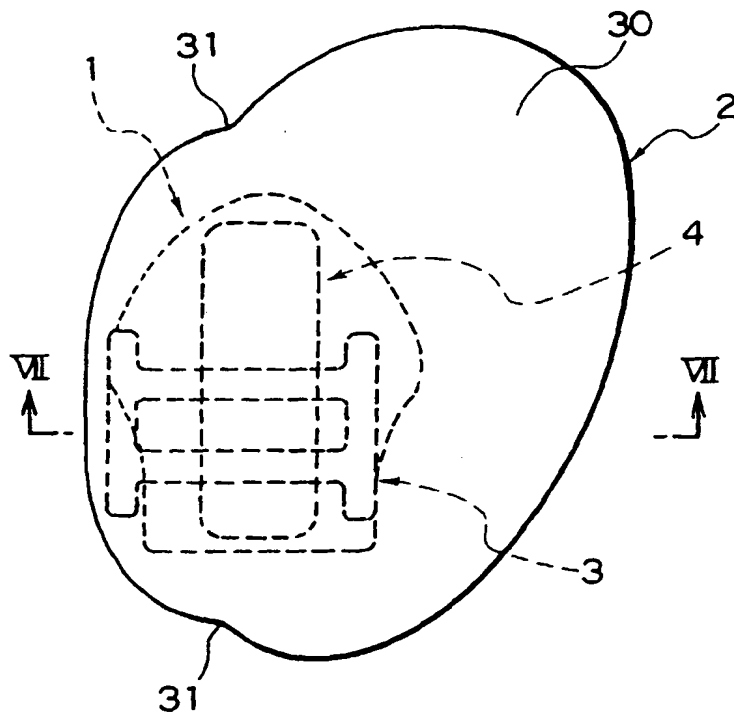
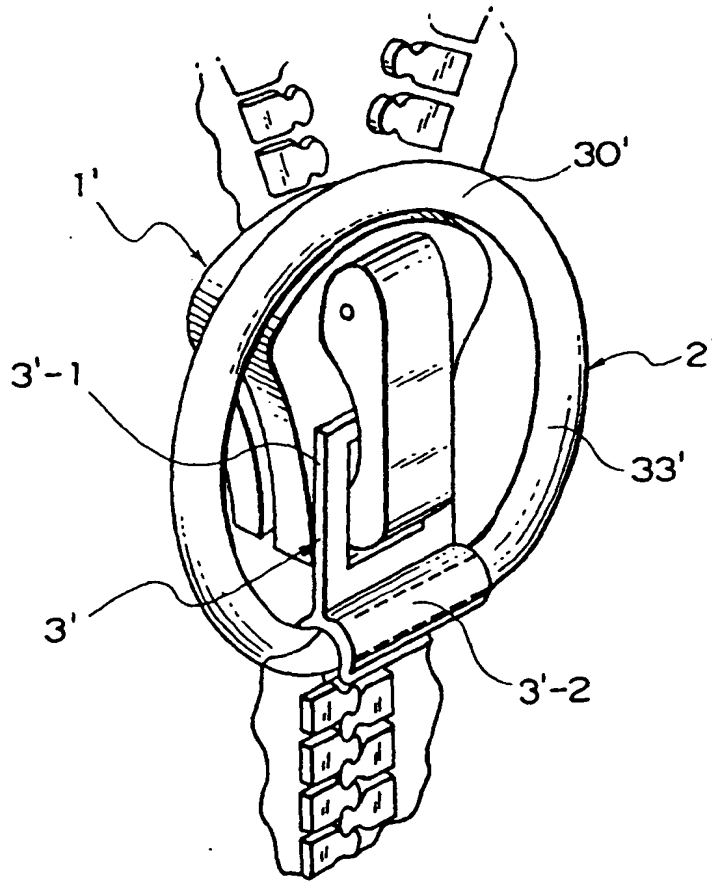
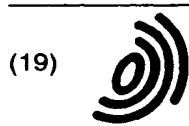


FIG. 13



**FIG. 15**  
PRIOR ART





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(11) **EP 1 088 490 A3**

(12)

## EUROPEAN PATENT APPLICATION

(88) Date of publication A3:  
02.01.2002 Bulletin 2002/01

(51) Int Cl.7: **A44B 19/26**

(43) Date of publication A2:  
04.04.2001 Bulletin 2001/14

(21) Application number: **00121106.9**

(22) Date of filing: **28.09.2000**

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(30) Priority: **30.09.1999 JP 27994699**

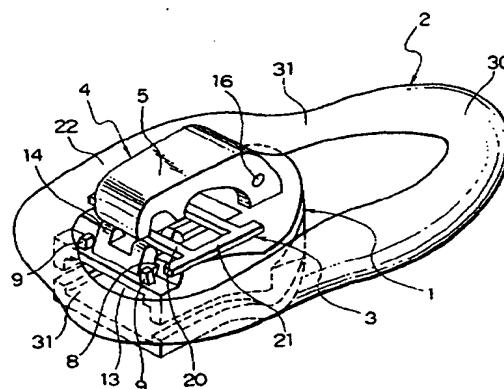
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(54) **Zipper pull of slider for slide fastener**

(57) An object of this invention is to provide a zipper pull of resilient body which is attached to a slider in a lateral direction thereof and capable of sliding the slider by rotating the zipper pull slightly so that the zipper pull is held in a stabilized state. A zipper pull mounting portion (4) is provided on a top surface of a slider body (1) and a connecting body (3) of a zipper pull (2) is disposed in a lateral direction relative to the mounting portion (4). The connecting body (3) is comprised of two lateral bars (20) disposed in parallel and vertical bars (21) connected to both ends thereof so as to be protruded longitudinally. One of the vertical bars (21) is buried in the zipper pull (2) of resilient body so as to form a fixing portion (22). The zipper pull (2) has an annular shape for surrounding the slider body (1). The lateral bars (20) of the connecting body (3) are inserted into the mounting portion (4). When a free end of the zipper pull (2) is lifted up, the fixing portion (22) is rotated and at the same time, the free vertical bar (21) of the connecting body (3) is lifted up, so that a locking pawl lever of automatic locking mechanism connected to the lateral bars (20) is lifted up, thereby allowing the slider to slide. When the slider is locked, the zipper pull (2) is fallen onto the slider body (1) so that it can be maintained in a stabilized condition without swinging freely.

**FIG. 1**



EP 1 088 490 A3

**ANNEX TO THE EUROPEAN SEARCH REPORT  
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EP 00 12 1106

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07-11-2001

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